

PLEASE AMEND THE SPECIFICATION AS INDICATED BELOW:

Page 1, paragraph beginning at line 4:

The invention relates to ~~[[a]]~~ chemical reactors employing electric discharge plasma as the source of high temperature. This reactor can be used in chemical engineering, metallurgy and other industries for the production of such chemical products as gas synthesis, hydrocarbons etc., as well as in environment control, health protection, biosphere preservation as an effective device for the decomposition of depleted persistent toxic agents and their removal from industrial exhaust and waste.

Page 1, paragraph beginning at line 18:

Among such reactors we can name, for instances, the device for high-temperature chemical reactions yielding powders of high-purity metals of IVb, Vb, VIb groups of the periodical table, i.e. titanium, tungsten, molybdenum etc., or their alloys as well as for the halogenation of metal oxides and the synthesis of hydrocarbons such as acetylene, gasoline etc. The device is equipped with a plasma generator producing plasma by means of an electrical discharge between the anode and cathode when plasma forming gas such as argon or nitrogen is fed there. The plasma from the generator and gaseous reaction mixture are fed to a special reaction zone in the device below the anode. A chemical reaction proceeding afterwards in the reaction zone yields the desired product. After the reaction the flow of the reaction mixture containing the desired product is quenched in the quenching zone and separated into several flows later combined in a collector zone where the pure target product is extracted (US patent № 384050 3,840,750).

Page 2, paragraph beginning at line 13:

Some plasma chemical reactors are known where the reaction gas serves directly as the plasma forming gas. Their design is much simpler than that of those described above because they have a single reaction chamber equipped with a pair of electrodes through which the reaction gas is passed between them under the application of high voltage striking an electric arc discharge. Among the plasma chemical reactors of the similar design are, for instance, the reactor whose reaction chamber is equipped with an anode and cathode to which high voltage is applied, as well as with

inlet and outlet devices for reagent inlet and the outlet of the target product (U.S. patent N^o 3658673). The reaction mixture is passed between the electrodes and set into forward-rotary motion leading to the formation of vortex stabilizing the plasma arc between electrodes. In this reactor the electrodes in addition to the above-mentioned factors are exposed to the aggressive chemical medium, their surface is soon eroded and unusable and are to be replaced frequently (every several hours). The electrodes erosion increases with the increasing in the electrical discharge current thus limiting the maximum current value and imposing restriction on the maximum productivity of plasma chemical reactor.

Page 3, paragraph beginning at line 8:

This is attained by the suggested design of a plasma chemical reactor consisting of reaction chamber, means for supplying the plasma forming gas and the means for removal of the aim product, at least a pair of electrodes placed ~~in~~ in the reaction chamber, so as to provide a gas arc formation in the electrode gap on the application of the electric voltage. Each electrode is shaped as an open container filled with metal and the means for supplying the reaction chamber with plasma forming gas to be fed to the electrode gap as a vortex.